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**Report of Community Analyses for Sustainable Intensification of Cereal – Based Farming System in the Sudano-Sahelian Zone in Ghana**

**I. Y. Dugje, I. A. Teli, A. Larbi, I. Gyamfi, S. S. J. Buah, R.A.L. Kanton, J. M. Kombiok, A. Y. Kamaraand I. Hoeschle-Zeledon**

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| --- | --- |
| DSC00653  **Mixed Youth Group** | **Mixed Elderly Group** |
| **DSC00643**  **Elderly Men Group** | **J:\USAID AFrica Rising\USAID Pix\CIMG0204.JPG**  **Elderly Women Group** |

**International Institute of Tropical Agriculture (IITA)**

**May 2012**

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**ACRONYMS**

AA Action Aid

ADB African Development Bank

ACDEP Association of Church Development Projects

ADDRO Anglican Diocesan Development Relief Organization

ADRA Adventist Development and Relief Association

ADVANCE Agricultural Development and Value Chain Enhancement program

AEA Agricultural extension agent

CBO Community Based Organization

BEWDA Bawku East Women Development Association

CCFC Christian Children’s Fund of Canada

CLW Community Livestock Worker

CODI Community Development Initiative

CRS Catholic Relief Service

CSLD Center for Sustainable Local Development

F Female

FAO Food and Agricultural Organization of the United Nations

FSC Forestry Service Commission

GCCL Ghana Cotton Company Limited

GES Ghana Education Service

GHS Ghana Health Service

GWI Global Water Initiative

JICA Japan International Cooperation Agency

ICOUR Irrigation Company of Upper Region

IDA Irrigation Development Authority

IFAD International Fund for Agricultural Development of the United Nations

IFDC International Centre for Soil Fertility and Agricultural Development

IITA International Institute for Tropical Agriculture

M Male/men

MAP Methodist Agriculture Program

MASLOC Microfinance and Small Loans Centre

MiDA Millenium Development Authority

MoFA Ministry of Food and Agriculture

NCD New Castle Disease

NGO Non Governmental Organization

OIC Opportunities Industrialization Center

PDL Plantation Development Limited

PICS Purdue Improved Cowpea Storage

PPR Peste des Petits Ruminants

PREA Participatory Research and Extension Approach

RAAP Rural Action and Appraisal Project

R4D Research for Development

SARI Savanna Agricultural Research Institute

SILDEP Sisaala Literacy and Development Program

SFMC Savanna Farmers Marketing Company

SWOT Strengths, Weaknesses, Opportunities and Threats

TUDRIDEP Tumu Deanery Rural Integrated Development Programme

UDS University for Development Studies

UER Upper East Region

UNDP United Nations Development Programme

USAID United States Agency for International Development

UWR Upper West Region

VVI Village Vision Images

W Women

WAAPP West African Agricultural Productivity Program

WVI World Vision International

Y Youth

YARO Youth Action on Reproductive Order

ZOOMUON

ZOVFA Zuuri Organic Vegetable Farmers’ Association

**EXECUTIVE SUMMARY**

**Background and Purpose**

* Rural livelihoods in West Africa are mainly agro-based, and the major components of the livelihood means are crops and livestock production, processing and marketing;
* Farmers produce cereals, legumes, vegetables and fruit trees; and keep livestock;
* However, optimal system productivity is limited by cocktail of constraints which include socioeconomic, biophysical, institutional and financial;
* Farmers’ dependence on the present methods of agricultural production without improved interventions has often resulted in environmental degradation, poverty, food insecurity and malnutrition, especially among the vulnerable;
* In the recent past, development in rural communities entails government agents instructing farmers as to what to do which often resulted in partial adoption;
* The evolution of the research and extension process has led to more involvement of farmers as partners in the research and extension agenda by adopting the Participatory Research and Extension Approach (PREA);
* Participatory research entails involving farmers in the process at all stages in the definition of the research agenda, conduct of research, evaluation of results and dissemination of the findings;
* The objectives of the PREA approach are: to facilitate local farmers in their identification of problems and the search for solutions; build strong linkages between local communities, extension agents and researchers and the private sector working as partners; and encourage transfer of appropriate technologies from farmer to farmer;
* The Africa Rising – Ghana Project is a Feed the Future support from the United States Agency for International Development (USAID) and coordinated by the International Institute of Tropical Agriculture (IITA) Ibadan;
* The project adopts the research for development (R4D) strategy and targets ‘sustainable intensification of maize/legume farming system in the sudano-sahelian zone of Ghana’;
* The Project aims to provide pathways out of hunger and poverty for small holder families, particularly for women and children, through sustainable intensification of cereal-based farming System ;
* Situation or community analysis is the first among the four key stages of the Participatory Research and Extension Approach;
* The analysis entails encouraging and mobilizing the communities to undertake their own situation analysis and start thinking on how they can deal with their own problems.
* The major objectives of the community analysis were to:
* share knowledge and information about the livelihood situation in the communities in relation to legumes/cereals/livestock production/processing/marketing,
* identify priority problems and opportunities for improved livelihoods,
* assess with the community members the existing technology options, and
* identify entry points for members within the innovative platforms for project implementation in the respective communities,
* identify community based organizations and select lead farmers and community seed producers at the community level,
* The task was accomplished through the conduct of stakeholder training workshop on community analysis tools; and the conduct of actual field work between 9th and 21st May 2012 in 60 communities using a field survey and community entry approaches;
* Data were collected on men, women and youth livelihood means as described by Hagmann *et al*. (1999) and Ellis-Jones *et al*. (2005) in the 60 communities in the project districts in Northern, Upper East, and Upper West Regions.

**Salient Findings from Northern Region**

* The results of the analysis in northern region showed that the project communities are clustered settlements with populations ranging from 180 in Frafra No.4 the most sparsely populated to 3850 in Zungu, the most densely populated;
* The common ethnic groups are the Dagomba, Mamprusi, Komkomba Chokosi, Gonja, Fulani, Ewe, Frafra, Dagarti, Sisala, Waala, Akan and Grunsi among others;
* The climate of the region is relatively dry, with a single rainy season that begins in May and ends in October with average annual rainfall of about 1000-1200 mm
* The dry season starts in November and ends in March/April with maximum temperatures occurring towards the end of March-April and minimum in December and January;
* The harmattan winds, which occur during the months of December to early February, have considerable effect on the temperatures in the region, which may vary between 14°C at night and 40°C during the day;
* The vast area in the region is still under populated and under cultivated;
* The agro-ecology is characteristically northern Guinea savanna with vegetation ranging from semi-deciduous clustered trees in West Gonja District to scattered trees and shrubs in Yendi District;
* The soils are gravelly sand in Savelugu/Nanton and sandy loam in the other 3 districts;
* Analysis of the existing farming system in the region showed that the men, women and youth in all communities are engaged in crop and livestock production ;
* The cereals are predominantly produced by men, while women are mainly involved in the production of legumes and the youths produce both cereals and legumes;
* Maize and sorghum are the major staple food crops followed by millet and rice, but rice is also grown for cash;
* Legumes such as groundnut, soybean and cowpea are mainly grown for cash although 10-40% of groundnut, soybean and cowpea are also devoted to food.
* The trend in production of maize is increasing probably because the crop is a major staple food crop in the region;
* Although soybean is relatively a new crop in the region the trend in production is increasing because farmers consider soybean production as an improved practice, also it improves women livelihood, it is easy to produce and ready source of income;
* Cattle, sheep, goats and local poultry (chickens, ducks, guinea fowls, pigeons, turkeys and doves) are the major livestock species raised;
* Most animals are kept for sale to realize income, but 5-10% of the small ruminants and poultry are used for food;
* The men and few youth predominantly keep cattle, while more women keep poultry, sheep and goats except in some communities where women do not keep any livestock;
* The trend in cattle production is decreasing in West Gonja and Savelugu/Nanton districts due to increased theft and poor/lack of kraal, however, the trend is increasing in Tolon/Kumbungu and Yendi districts as cattle provides stable source of income, indicator of wealth and improved livelihood at the community level;
* Goat and sheep production is increasing across the four districts as these categories of animals are used for ceremonies, paying bride price, source of income and savings;
* The trend in poultry keeping is mixed but more participants reported increase in trend because poultry is a source of income and food, it is also used for rituals and savings;
* Most processing activities done at the community level are for value addition for domestic home consumption.
* The processing activities identified included manual or mechanical threshing, winnowing and milling and only women and youths are mainly involved;
* The multiplicity of forms for uses, ease of processing, ready market, increase in food preference and consumption are the major reasons for increase in trend for processing of crop produce;
* Lack of processing skills and milling machines, low produce, and limited use are some of the reasons why processing of a produce could remain static or decrease;
* All groups in the community sell crop produce but the youths are mainly involved in marketing of rice, while women sell most legumes, rice and maize;
* The trend in the marketing of maize, rice, cowpea, groundnut and soybean is increasing because there is ready market, good price and increased consumption;
* However, the trend for sorghum and millet is either static or decreasing due to low production and the declining preference for these two crops across the communities;
* Processing of cattle, sheep and goats is mainly restricted to butchers and households performing funeral or naming ceremonies;
* Poultry is mainly processed due to its ease of handling and domestic consumption.
* The trend in processing of livestock is static or decreasing in West Gonja district due to low patronage or lack of processing skills but the trend is on the increase in Savelugu/Nanton districts in spite of disease prevalence which reduces production;
* Marketing of livestock involve men, women and youths but most households are involved in marketing of poultry and less for cattle and dog;
* The ranking of crops and livestock in the region showed that the most popular cereal crop is maize followed by rice; groundnut and soybean are the two most common legumes grown and poultry and sheep are the most popular livestock species raised by all groups;
* The general crop production problems identified in the project communities were varied and included: low soil fertility, *Striga* infestation, erratic rains, pest infestation, and high weed infestation, high cost of pesticides, inadequate certified seeds, and credit, inadequate extension and tractor services;
* Factors that limit livestock production in the area include prevalence of livestock diseases such as pneumonia and diarrhea in small ruminants, ticks and new castle in poultry, inadequate feeds and watering points especially during the dry season, lack of veterinary services and drugs and inadequate housing.
* Lack of processing facilities, lack of groundnut shellers and dryers, and lack of rice mill; lack of organized local market, low market prices, inadequate access roads and storage facilities, inadequate grinding mills and sometimes low demand for farm produce were some of the major processing and marketing constraints identified;
* The youths plant early maturing and/or drought tolerant varieties and conserve water by creating earth bunds to mitigate the problem of drought; apply chemical fertilizers/animal manure to cope with low soil fertility; and practice intercropping of cereals with legumes to reduce *Striga* infestation.

**Salient Findings from Upper East Region**

* The Upper East Region is located in the Sudan savanna zone.
* The average annual rainfall is about 900 – 1000 mm, occurring in a single rainy season from May to October. The rest of the year is dry
* The soils are predominantly sandy loam with some gravel which support small land holdings of low input-output farming systems, and has dire impact on household food security such as availability, access, quality and price;
* The population comprises 60% females and 40% males who live in scattered settlements;
* The region is highly diverse ethno-linguistically, and the major ethnic groups in the region are Kusasi, Moshie, Busasi, Mamprusi, Bisa, Fulani, Hausa and Zabarma.;
* The major cereal crops cultivated by all groups include early millet, late millet, maize, sorghum and rice, while major legumes are groundnut, cowpea, soybean and bambara groundnut;
* Greater proportion of all cereals produced is used for food with 10-50% devoted for cash. The legumes are essentially grown for cash with 10 – 50% used for food.
* The millets constitute the major food crop and soybean a major cash crop with 90% each devoted for food and cash, respectively.
* The trend in the production of all crops is decreasing except for maize in the region;
* Maize production is increasing across the region because maize is a new crop and can realize very high yield when chemical or organic fertilizer is applied;
* There is also increasing market opportunities for maize and maize products in the region.
* Declining soil fertility, erratic rains, and flower pests were some of the reasons advanced for decline in production of early and late millet, sorghum and rice;
* Prevalence of leaf diseases, low soil fertility and lack of improved varieties are discouraging farmers from producing groundnut and bambara groundnut, while these factors together with insect pest infestation reduce cowpea production;
* Lack of processing skill was the only reason advanced for decline in soybean production.
* Communities with access to water source for dry season gardening also engage in dry season farming to supplement the rainy season harvest and to generate additional income;
* In Bawku districts, men are involved in the production of all types of crops, but more men produce maize, sorghum and millet;
* The women do not produce sorghum and late millet, but more women are involved in the production of legumes such as cowpea, groundnut, soybean and bambara groundnut; ;
* More youths are involved in the production of maize and soybean; and some minor crops like sesame and *neri* in Binaba;
* Men produce the cereal crops mainly for food, while rice and legumes are mainly produced for cash by all groups;
* The trend in soybean production is increasing because it is considered nutritious and its production does not require external inputs such as fertilizers and pesticides;
* Local fowl, guinea fowl, ducks,turkey, sheep, goats, cattle, pigs, dogs and donkeys are produced by all groups;
* However, more women keep cattle and poultry, while more men and women keep pigs than youths in Talensi/Nabdam and Bongo districts;
* In Bawku districts, more youths keep dogs, more women keep donkeys and more men keep cattle than the other groups;
* Greater proportion of all categories of livestock is produced for cash, cattle are the least category used for food, while goats, dog, poultry and pigs are the most important food animals in the region;
* The trend in livestock production in Talensi/Nabdam and Bongo districts is decreasing for all categories except for poultry which is increasing because poultry is multipurpose and is used for rituals, festivals, payment of dowry, high quality food and for quick cash;
* However, poultry production could be marred by the prevalence of Newcastle disease which causes high bird mortality in the region;
* The decrease in trend for other categories is due to decrease in grazing area for cattle and donkeys, high cost of food and increase in incidence of rabbies in dogs, high cost of drugs, feeds and housing for pigs;
* The trend in the production of sheep, goats, pigs, donkeys and dogs is increasing in Bawku municipal because the small ruminants and pigs are prolific, and provide ready cash, and the use of donkeys as work animals is on the increase;
* However, high keet mortality in poultry, inadequate grazing area and theft are some of the major reasons for decrease in production of livestock across the Bawku area;
* All groups are involved in the processing and marketing of cereals and legumes in Talensi/Nabdam and Bongo districts;
* Sorghum is processed into *pito*, a local brew and the trend is increasing due to high demand and ready market in the region, maize is processed into *kenkey*, and millet into *koko* (watery porridge) and *masah* (fried paste) but the demand for these products is low and hence there is less incentive in the processing and the trend is decreasing;
* Groundnut is processed into oil, paste and cake and soybean is processed into *dawadawa*;
* In Bawku districts soybean, rice, sorghum and groundnut were the dominant crops where value-addition and secondary processing are mostly done by women and women groups;
* Men and Youth are found more in the processing of animals into *kebab* but women still dominate if it is to be smoked or fried for sale;
* Early millet and sorghum are the major food crops in Talensi/Nabdam and Bongo districts;
* The ranking of the cereals for cash showed that sorghum and maize are the major cash crops in the two districts;
* Maize is gradually gaining dominance over sorghum as cash crop due to its high response to fertilizers and high productivity;
* The ranking of the legumes for food and cash was similar in the order: groundnut > cowpea > groundnut > soybean;
* Poultry is the most important among the livestock species as it was ranked first for both food and cash across the communities in the region;
* In Bawku,districts, maize and millet were the co-dominant livelihood contributors;
* Maize is preferred due to high yields per unit area compared to millet and sorghum;
* Secondly, maize could be used for same local dishes as millet and sorghum;
* Soybean production is gradually increasing due to high income value, compatible for intercropping with maize and varied forms of utilization;
* Goat and pig production were second most important economic animals after poultry particularly among women and female-headed households in Bawku districts;
* Cattle are owned by few households and mainly used for tillage, but majority of households owned donkeys, which are mainly used for traction and transport;
* The most common crop production problems identified in Talensi/Nabdam and Bongo districts are unreliable/erratic rains, declining soil fertility, lack of improved seeds, inadequate land preparation equipment, pests, diseases and weeds; and lack of credit;
* Farmers cope with unreliable rains by planting early improved/drought tolerant varieties, which are high yielding and attract higher market price;
* But these varieties are not readily available and require higher inputs than the local ones;
* Use of farm yard manure, chemical fertilizers and intercropping of cereals with legumes are the major coping strategy for low soil fertility, but inadequate access and high cost of transportation are the major factors limiting the use of these options;
* Use of animal traction ensures early land preparation, however, there is limit to its use in heavy soils or rice ecologies which are difficult to cultivate; also animal traction is inadequate and takes a long time to plough a larger area;
* The major livestock problems in the region include: new castle disease (NCD) in poultry, high keet mortality in guinea fowls, poor housing for pigs, and poultry and Peste des Petits Ruminant (PPR) in small ruminants;
* In Bawku districts the most recurring constraints were drought, declining soil fertility, lack of credit, high cost of agro-inputs, degraded grazing lands, inadequate watering points for animals and lack of bullocks and tractor services during land preparation;
* High animal mortality was a recurring constraints in all communities and this discourages, especially the youth from keeping livestock;
* The farming system in the region is also vulnerable to drought, flood, bush burning and destruction of farm land by small scale miners;
* Although each of these factors is important, more grievous are the problems of bush burning and destruction of farm land by the small scale miners;
* Women and youths have less access to land especially in Bawku districts and can be considered more vulnerable since they have fewer alternatives.

**Salient Findings from Upper West Region**

* The Upper West Region is located in the extreme northwest of Ghana with a landscape that is gently undulating, 200-350 m above sea level;
* The vegetation is Guinea savanna, with a high density of typical tree species, while the soils are mainly sandy loam with patches of laterite in some of the communities;
* The low population densities observed across most of the communities in the region have permitted a remarkable conservation of vegetation, unlike the other two regions;
* The climatic regime is semi-arid with annual rainfall of 1000 – 1200 mm received within a seven-month rainy season beginning from April and ending in October;
* The major ethnic groups in the region include Dagaaba, Waala, Lobbi, Sissala and Chakali;
* The major cereal crops grown in the Upper West region are sorghum, maize, millet and rice, while the major legumes are cowpea, groundnut, groundnut and soybean;
* The cereals are mainly produced for food (40 – 99%) with millet and sorghum leading;
* Rice and maize are also produced for cash, while Kersting's groundnut, cowpea and groundnut are also used more for food than the other legumes;
* About 10-50% of legumes produced are used for food across the communities but, 90-98% of the legumes are produced for cash;
* There is increase in production of maize across the region due to availability of improved management practices such as improved maize varieties and fertilizers;
* Rice production is also increasing in Goriyiri and Kalsegra in Nadowli district and in Kpalinye and Naaha in Wa East district due to use of improved management practices;
* The production of sorghum and millet is decreasing across all communities due to erratic rains, low soil fertility, poor management practices and *Striga* infestation;
* Cowpea production is increasing across the region due to use of improved management practices such as improved seed and adoption of appropriate pests control practices;
* The trend in production of the other legumes is increasing in some communities due to availability of improved management practices and tolerance to drought, while the reverse is the case in other communities where erratic rains and poor soil fertility occur;
* Major livestock species produced in the region are goat, sheep, cattle, pigs and poultry;
* Women are generally not involved in livestock production in Goriyiri in the Nadowli district, while a few keep poultry, pigs and goat in Kpalinye in Wa East district;
* Rabbit and poultry are mainly raised for food (50 – 99%), goat, sheep, cattle and pigs are major sources of cash (50-99%), while donkeys provide traction and cash;
* The trend in livestock production is increasing for cattle and rabbit in Tabiase and for donkey in Goriyiri due to proper health care;
* The trend is increasing for cattle due to proper care by the Fulani and for poultry due to its use for spiritual purposes in Kpalinye in Wa East district;
* Except for pigs in Loggu, livestock production is increasing for all the livestock species due to improved veterinary services, availability of pasture and good market price;
* The decline in livestock production in some communities could be due to increase in prevalence of diseases and mortality, high incidence of theft and poor management;
* Processing of cereals and legumes is a major activity in Tabiase where more people are involved than in the other communities in Nadowli district
* Fewer people are involved in processing in Daffiama and Kalsegra in Nadowli district; Zinnye and Loggu in Wa East district.
* Less people are involved in the processing of millet, rice; groundnut, bambara groundnut and soybean compared to other crops across most of the communities in the region.
* Sorghum is also processed into malt or pito, a type of local alcoholic drink.
* Many recipes are derived from cowpea and few from soybean; groundnut is processed into paste and oil;
* Knowledge of processing soybean is limited and *dawadawa* is the only recipe derived;
* The trend in processing of the major crops is increasing either due to increase in domestic consumption or increase in market price to generate income;
* Low yields, low production level and lack of knowledge of processing are some of the major factors limiting processing and marketing of agricultural produce in the region;
* Processing of livestock products is limited to an average of 30-40% of the households per community;
* Goat, poultry, pig and sheep are the most common livestock species processed mainly for domestic consumption, while cattle are also processed for cash;
* The trend in processing of livestock in some communities is on the increase due to increase in domestic consumption, while it is decreasing in other communities due to increase in animal mortality;
* More households are involved in marketing of livestock products in Tabiase and Goriyiri in Nadowli district and Kpalinye in Wa East districts than the other communities;
* The trend in marketing of livestock products is increasing in Tabiase, Goriyiri, and Ombo in Nadowli district; and Kpalinye, Naaha and Loggu in Wa East district due to increase in demand and the need for more cash by households;
* The trend is on the decrease in the other communities due to low production and theft;
* The ranking of the crops revealed that maize was ranked first for both food and cash, sorghum was ranked second, followed by rice and millet;
* Cowpea was ranked first followed by groundnut in Nadowli district, while groundnut was ranked first followed by soybean and cowpea in Wa East district;
* The most important food and cash crops are maize, sorghum, cowpea, groundnut and soybean;
* Poultry, cattle and pigs are the most important animals for food and cash depending on the community in Nadowli district
* In Wa East district, sheep and goat are the most popular animals for food, while cattle was ranked first for cash and poultry was next in ranking for both food and cash;
* Although all livestock species are used for food and cash, cattle is the most important livestock species for income generation, while poultry, sheep and goats are the most important animals food in the region;
* The most recurring crop production problems mentioned across the region were erratic rainfall, inadequate land preparation equipment, lack of improved seeds, declining soil fertility, *Striga* infestation, pests, diseases and weeds;
* Farmers plant early maturing varieties or/and plant early to cope with the erratic rainfall;
* Animal traction is used for land preparation in the absence of tractors;
* Local varieties are used in the absence of improved varieties, local varieties are cheap and timely, but result in late maturity and low yields;
* Application of chemical fertilizers is the main coping strategy for declining soil fertility, but the trend is declining due to unavailability and high cost of the fertilizers;
* Insecticide spray is used to control insect pests of cowpea, herbicides are applied to control weeds and the PICS bags are used for cowpea storage;
* The trend in the use of these practices is increasing because they are effective, improve product quality and reduce drudgery despite the hazards involved;
* Lack of machinery, skills and storage facilities were the major crop processing problems;
* Lack of organized market, low produce price and inadequate means of transportation were the major marketing problems;
* The major livestock production problems mentioned were high mortality due to diseases, lack of improved breeds, high incidence of theft, inadequate watering points, inadequate housing and inadequate veterinary services;
* Drought and low product prices, were the major types of shocks, bush burning and deforestation are the major causes of drought which occur annually;
* The coping strategies are prayers and use of early maturing varieties.

**Salient Findings Common to All Regions**

* Analysis of the resource inventory in the region showed that opportunities exist for irrigated farming by underground water abstraction using wash boreholes and tube wells and fish production in the low lying areas and inland valleys;
* Other crops of economic importance that contribute to livelihoods are yams, sweet potato, cassava, tomato, onion and pepper; mango, citrus and banana;
* Most communities in the three regions do not have organized market days and marketing activities are restricted to market days in the district and regional capitals;
* Low product prices also occur annually and are caused by lack of access to market and few buyers in the communities especially in the Upper West region;
* There is poor infrastructure of roads and transportation linkage among communities that may affect movement of farm produce and market access;
* Also the presence of input dealers in the communities is low as the farmers often depend on markets in the district and regional capitals for farm inputs;
* While farm produce constitute the major commodities moved by farmers and few middlemen from the communities to the district and regional centers, the major commodities moved to the communities are soup ingredients, farm inputs, clothing and building materials;
* Community based organizations were identified in the communities, and a quick SWOT analysis of the CBOs showed that most of them are weak with the exception of a few in Yendi district in Northern region;
* There was high presence of both non-governmental and government institutions especially near the district and regional capitals;
* It was observed that these institutions presently have or had some links with the farmers groups in most of the communities in the three regions;
* The level of enthusiasm and willingness to cooperate with the project shown by the participants during the study is an indication of strength towards achieving the set goals, purpose and objectives of the project.